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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,644	05/29/2001	Hong-Yih Juang	CYNTEC-9001	7996

7590 11/24/2003

Bo-In Lin  
13445 Mandoli Drive  
Los Altos Hills, CA 94022

EXAMINER
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SEFER, AHMED N

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 11/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/867,644

Applicant(s)

JUANG ET AL.

Examiner

A. Sefer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 1-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15, 17-30 and 32-45 is/are rejected.
- 7) ☒ Claim(s) 16 and 31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/17/03 has been entered.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins USPN 4,788,523 in view of Zadman et al. USPN 4,677,413.

Robbins discloses in fig. 7 a resistor array comprising a plurality of resistors 234 comprising a base; a plurality of electrodes 222 composed of conductive material disposed directly on said base which could be employed for connecting each of said resistors to external circuits wherein said base between every two of said electrodes having a precisely controlled distance for providing a precisely defined resistance for each of said resistors, but does not disclose a metallic bulk base.

Zadman et al disclose (see figs. 8-11 and col. 5, lines 32-47) a precision resistor disposed on metallic bulk base 3.

Therefore, it would have obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Zadman et al with Robbins' device since that would provide an improved heat dissipation as taught by Zadman et al.

As to claim 17, Robbins discloses a plurality of scribing lines disposed between said resistors for scribing said resistor array into a plurality of resistors each comprising at least two electrodes that could be employed for connecting each of said resistors to external circuits.

4. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins US No. 4,788,523 in view of Zadman et al. USPN 4,677,413.

Robbins discloses in fig. 7 a resistor comprising a plurality of resistors 234 comprising a base which could be employed for connecting each of said resistors to external circuits; at least electrodes 222 composed of conductive material disposed directly on said base wherein said base between said two of said electrodes having a precisely controlled distance for providing a precisely defined resistance for each of said resistor, but does not disclose a metallic bulk base.

Zadman et al disclose (see figs. 8-11 and col. 5, lines 32-47) a precision resistor disposed on metallic bulk base 3.

Therefore, it would have obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Zadman et al with Robbins' device since that would provide an improved heat dissipation as taught by Zadman et al.

5. Claims 18 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Zadman et al. as applied to claims 15 and 30 above, and further in view of Thomas et al. (J. Vac. Sci. Technol., Vol. 13, No. 1, Jan/Feb. 1976).

The combined references disclose all the claimed subject matter but do not specifically disclose a nickel-copper alloy metallic material.

Thomas et al. disclose in fig. 2 a low TCR metallic material composed of a metal plate comprising a nickel-copper alloy.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use a nickel-copper alloy metallic material, since having a metallic material comprising same material as a resistor/electrode would save material thereby reducing cost.

6. Claims 20-22 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Zadman et al. as applied to claims 15 and 30 above, and further in view Sone et al. (JP 2000-173801).

The combined references fail to specifically disclose resistors having resistance ranging approximately from one milli-ohm to one ohm.

Sone et al disclose in figs. 1-10 plurality of electrode columns disposed on a metal plate having a precisely defined position for providing precisely defined resistance for each resistors.

Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to dispose metal plate having a precisely defined position for providing precisely defined resistance for each resistors, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

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As to claims 21, 22, 35 and 36, Sone et al disclose low resistance resistors could be achieved by adjusting dimensions of certain elements of the device. Robbins discloses a length of a resistor of about 2.54 mm. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to use electrodes and resistors of a suitable dimensions, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

7. Claims 19 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Zadman et al. as applied to claims 15 and 30 above, and further in view Shimada (JP 8-22903).

The combined references fail to specifically disclose an electrode layer disposed on each of said electrodes comprising a copper layer and a tin-lead alloy layer on each of said electrode column.

Shimada discloses an electrode layer disposed on each of electrode columns 2 comprising a copper layer 7 and a tin-lead alloy layer 9 on each of said electrode columns.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to employ a copper layer and a tin-lead alloy layer on each of said electrode columns, since that would control solder wetting degradation and improves background surface of nickel plating.

8. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Zadman et al and Thomas et al. (J. Vac. Sci. Technol., Vol. 13, No. 1, Jan/Feb. 1976).

Robbins discloses in fig. 7 a resistor array comprising a plurality of resistors 234

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each comprising a base; a plurality of column-shaped electrodes disposed directly on said base which could be employed for connecting each of said resistors to external circuits and having a precisely controlled distance for providing a precisely defined resistance for each of said resistor, but does not disclose a metallic bulk base or electroplated electrodes.

Zadman et al disclose (see figs. 8-11 and col. 5, lines 32-47) a precision resistor disposed on metallic bulk base 3.

Therefore, it would have obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Zadman et al with Robbins' device since that would provide an improved heat dissipation as taught by Zadman et al.

Thomas et al disclose electroplated electrodes composed of low TCR metallic material.

It would have been obvious to one skilled in the art at the time the invention was made to use electroplated electrodes, since that would provide the capability of reducing a conductor resistance.

As to claim 24, Robbins discloses a plurality of scribing lines disposed between said resistors for scribing said resistor array into a plurality of resistors each comprising at least two electrodes which could be employed for connecting each of said resistors to external circuits.

As to claim 25, Thomas et al. disclose in fig. 2 a metallic material composed of a metal plate comprising a nickel-copper alloy.

9. Claims 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Zadman et al and Thomas et al. (J. Vac. Sci. Technol., Vol. 13, No. 1, Jan/Feb. 1976).

Robbins discloses in fig. 7 a resistor comprising a plurality of resistors 234 each

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comprising a base; at least two column-shaped electrodes 222 disposed directly on said base which could be employed for connecting each of said resistors to external circuits and having a precisely controlled distance for providing a precisely defined resistance for each of said resistor, but does not disclose a metallic bulk base or electroplated electrodes.

Zadman et al disclose (see figs. 8-11 and col. 5, lines 32-47) a precision resistor disposed on metallic bulk base 3.

Therefore, it would have obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Zadman et al with Robbins' device since that would provide an improved heat dissipation as taught by Zadman et al.

Thomas et al disclose electroplated electrodes composed of low TCR metallic material.

It would have been obvious to one skilled in the art at the time the invention was made to use electroplated electrodes, since that would provide the capability of reducing a conductor resistance.

As to claim 38, Thomas et al. disclose in fig. 2 metallic material composed of a metal plate comprising a nickel-copper alloy.

10. Claims 27-29 and 40-42 rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Zadman et al and Thomas et al as applied to claims 23 and 37 above, and further in view of Sone et al. (JP 2000-173801).

The combined references fail to specifically disclose resistors having resistance ranging approximately from one milli-ohm to one ohm.

Sone et al disclose in figs. 1-10 precisely defined resistance for each resistor.



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Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to dispose metal plate having a precisely defined position for providing precisely defined resistance for each resistors, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

As to claims 28, 29, 41 and 42, Sone et al disclose low resistance resistors could be achieved by adjusting dimensions of certain elements of the device. Robins discloses a length of a resistor of about 2.54 mm. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to use electrodes and resistors of a suitable dimensions, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

11. Claims 26 and 39 are rejected under 35 U.S.C. 103(a) as being as being unpatentable over Robbins in view of Zadman et al and Thomas et al as applied to claims 23 and 37 above, and further in view of Shimada (JP 8-22903).

The combined references fail to specifically disclose column-shaped electroplated electrode comprising a copper layer and a tin-lead alloy layer.

Shimada discloses electroplated electrode comprising a copper layer 7 and a tin-lead alloy layer 9.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to employ a copper layer and a tin-lead alloy layer, since that would control solder wetting degradation and improves background surface of nickel plating.

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*Allowable Subject Matter*

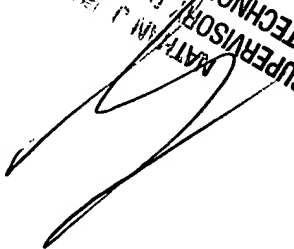
12. Claims 16 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (703) 605-1227.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601.

ANS

November 12, 2003

  
SUPERVISOR, PATENT  
TECHNOLOGY CENTER  
NATHAN FLYNN